

## CLAIMS

What is claimed is:

1. A system for electronically simulating participation by a user in a pre-recorded musical performance comprising:

- 5 a. a musical instrument, the musical instrument generating an instrument audio signal at an instrument audio output, the instrument audio signal varying in response to operation of the instrument by the user of the system;
- 10 b. a video source providing a source video signal at a source video output, the source video signal representing a video portion of the pre-recorded musical performance;
- c. a video display responsive to the source video signal whereby the user can view the video portion of the pre-recorded musical performance on the video display;
- 15 d. an audio source providing a source audio signal at a source audio output, the source audio signal representing an audio portion of the pre-recorded musical performance, the audio portion including an instrument sound track containing pre-recorded musical sounds that would be generated by the musical instrument in the pre-recorded
- 20 musical performance;
- e. a system interface device having a first audio input electrically connected to the instrument audio output, a second audio input

electrically connected to the source audio output, and a first interface audio output;

f. the system interface device including a source audio control circuit responsive to the instrument audio signal, whereby a characteristic of the source audio signal is controlled in response to operation of the musical instrument by the user to provide a controlled source audio signal at the first interface audio output; and

g. an audio playback transducer responsive to the controlled source audio signal such that the user can listen to the audio portion of the pre-recorded musical performance on the transducer, in synchronization with the video portion.

2. The system of Claim 1 whereby the characteristic of the source audio signal controlled by the source audio control circuit is a source audio signal level.

3. The system of Claim 2 wherein the musical instrument is a guitar whereby variations in striking of strings on the guitar by the user produces changes in level of the audio portion of the pre-recorded musical performance on the audio playback transducer.

4. The system of Claim 1 wherein the system interface device further comprises an instrument audio switch responsive to the instrument audio signal level to connect the controlled source audio signal to the interface audio output only when the instrument audio signal level

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reaches a pre-determined threshold generated by operation of the musical instrument.

5. The system of Claim 4 further comprising a bypass switch operable when switched to a bypass position to connect the instrument audio signal to the audio transducer such that the user can listen to the instrument audio signal while operating the musical instrument and while viewing the video portion of the musical performance.

6. The system of Claim 5 wherein the system interface device is further operable to suppress the instrument audio track when the bypass switch is in the bypass position.

7. The system of Claim 1 further comprising an audio mixer operably connected between the interface audio output and the audio transducer.

8. The system of Claim 7 wherein the audio mixer is further operably connected between the source audio output and the first audio input on the interface device.

9. The system of Claim 8 further comprising an audio effects processor operably connected between the system interface device and the audio mixer.

10. The system of Claim 1 wherein the audio source and the video source are combined in a video tape machine.

11. The system of Claim 1 wherein the audio source and the video source are combined in a video disc machine.

12. The system of either Claim 10 or Claim 11 wherein the video display and the audio playback transducer are combined in a stereoscopic head set wearable by the user.

13. A system for simulating participation of a user playing a musical instrument in a pre-recorded musical performance having audio and video portions, the musical instrument producing instrument audio signals at an instrument audio output when the instrument is played, comprising:

a. a source playback device for playback of the audio and video portions of the pre-recorded musical performance through corresponding source audio and source video outputs;

b. a source audio control device for controlling one or more characteristics of the audio portion of the pre-recorded musical performance during playback, the source audio control means operably connected to the source audio output and to the instrument audio output and having a controlled audio output; and

c. the source audio control device is responsive to the instrument audio signals whereby at least one characteristic of the audio portion of the pre-recorded musical performance is controlled by playing of the musical instrument by the user.

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14. The system of Claim 13 wherein the audio portion of the pre-recorded musical performance comprises a separate instrument sound track and whereby the characteristic of the audio portion controlled by the source audio control circuit is a volume level of the instrument sound track played by the system.

15. The system of Claim 14 wherein the musical instrument is a guitar and wherein the instrument sound track comprises pre-recorded guitar music such that the volume level of the pre-recorded guitar music played by the system is controlled by playing of the guitar by the user.

16. The system of Claim 15 further comprising a bypass switch operable by the user to suppress the instrument audio track and to cause the instrument audio signals to be played by the system when the user plays the guitar in synchronization with video portion of the pre-recorded musical performance.

17. The system of Claim 16 wherein the audio portion of the pre-recorded musical performance further comprises a performance audio track separable from the instrument audio track such that the volume level of the pre-recorded guitar music is controlled independently of the performance audio track.

18. The system of Claim 13 further wherein the source audio control device is further operable to cause initial activation of the source playback device in response to playing of the guitar by the user.

19. The system of Claim 13 further comprising a headset wearable by the user, the headset having left and right audio speakers and a stereoscopic video display, the left and right speakers operably connected to left and right channels on the source audio output and to the controlled audio output, and the video display operably connected to the source video output.

20. The system of Claim 13 further comprising an audio mixer, the mixer operably connected between the source audio, instrument audio, and controlled audio outputs and the left and right speakers.

21. A system for allowing a player using a guitar to control simulated participation in a musical concert during synchronous playback of a pre-recorded concert video track, pre-recorded left and right concert sound tracks, and a separate pre-recorded guitar track, the system comprising:

a. an audio/video playback device adapted to play the pre-recorded video track through a video source output in synchronization with playback of the pre-recorded left and right concert sound tracks through left and right channel source outputs and the pre-recorded guitar track through a guitar track source output;

b. a video display connected to the video source output;

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c. an audio interface box having an instrument input connected to an instrument output on the guitar, an instrument audio output, a guitar track input, and a controlled guitar track output;

d. an audio mixer having a mixer source input connected to the left and right channel source outputs and to the guitar track source output, a mixer instrument input connected to the instrument audio output, a guitar track output connected to the guitar track input on the interface box and adapted to output the pre-recorded guitar track, a controlled guitar track input connected to the controlled guitar track output; and a mixer audio output having right and left channels, the mixer audio output providing a system audio signal responsive to instrument audio signals at the mixer instrument input, to the guitar track, and to the left and right sound tracks;

e. left and right audio speakers connected to respective left and right channels of the mixer audio output;

f. the interface box further comprising a guitar channel control circuit operable to control a signal level of the guitar track at the controlled guitar track output in response to variation in instrument audio signals generated at the instrument audio output when the guitar is played; and

g. whereby the player can hear the left and right pre-recorded concert sound tracks and the guitar track while viewing the video

track and can control a sound volume of the guitar track by playing the guitar.

22. The system of Claim 21 further comprising a bypass switch connected to a switch input on the interface box, the interface box further including a  
5 bypass circuit responsive to the bypass switch and operable to inhibit output of instrument audio signals to the mixer when the bypass switch is in a normal position, and operable to inhibit output of the pre-recorded guitar track to the mixer when the bypass switch is in a bypass position, whereby the player can selectably play and hear the guitar in synchronization with  
10 the left and right concert sound tracks and with the concert video track.

23. The system of Claim 21 further comprising an effects processor connected between the instrument audio output and the mixer instrument input.

24. The system of Claim 21 wherein the left and right audio speakers and  
15 the video display are combined in a headset wearable by the guitar player.

25. A method of a simulating participation by a musician in a recorded concert comprising the steps of

a. playing on a playback device a pre-recorded concert video track in synchronization with a pre-recorded concert sound track and a pre-  
20 recorded instrument sound track;



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b. separating the instrument sound track from the concert sound track and providing the separated instrument sound track to a control device;

5 c. varying in the control circuit at least one parameter of the instrument sound track in response to audio signals generated by a musical instrument when played by the musician, thereby generating a controlled instrument sound track; and

10 d. providing a normal simulation mode in which the controlled instrument sound track and the concert sound track are played on a sound system in synchronization with display of the concert video track.

26. The method of Claim 25 further comprising the step of providing a bypass simulation mode in which the pre-recorded instrument track is suppressed and the audio signals generated by the musical instrument while  
15 the musician plays the instrument are played on the sound system in synchronization with the concert sound track and with display of the concert video.

27. The method of Claim 26 wherein the musical instrument is a guitar.

28. An apparatus for controlling playback from a playback device of a pre-  
20 recorded instrument sound track in synchronization with a pre-recorded concert sound track and a pre-recorded concert video track comprising:

a. a musical instrument having an instrument audio output;

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b. a control circuit connected to the instrument audio output and to the playback device; and

c. the control circuit comprising an instrument track input connected to an instrument track output through a signal conditioning circuit, the signal conditioning circuit responsive to audio signals generated by the musical instrument when the instrument is played whereby the control circuit generates a controlled instrument track signal at the instrument track output.

29. The apparatus of Claim 28 further comprising a bypass circuit controlled by a bypass switch and operatively connected to the control circuit, the switch having a bypass position in which the bypass circuit inhibits generation of the controlled instrument track signal and allows audio reproduction of the audio signals generated by the musical instrument during playback of video track and the concert sound track.

30. The apparatus of Claim 29 wherein the musical instrument is a guitar and wherein the pre-recorded instrument track comprises guitar music.